No. 9900250

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

NDSU Research Foundation

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED DISTINCT VARIETY OF SEXUALLY REPRODUCED, OR TUBER PROPAGATED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF TWENTY YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE ABOVE PURPOSE , OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

WHEAT, COMMON

'Ransom'

In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D.C. this twelfth day of September, in the year two thousand one.

Attest:

Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

Secretary of Agriculture

REPRODUCE LOCALLY. *Include form number and date on all reproductions.* FORM APPROVED - OMB NO. 0581-0055

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
SCIENCE AND TECHNOLOGY DIVISION - PLANT VARIETY PROTECTION OFFICE

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

(Instructions and information collection burden statement on reverse)

The following statements are made in accordance with the Privacy Act of 1974 (5 U.S.C. 552a) and the Paperwork Reduction Act (PRA) of 1995.

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF APPLICANT(S) *(as it is to appear on the Certificate)*
NDSU Research Foundation

2. TEMPORARY DESIGNATION OR EXPERIMENTAL NUMBER
ND 8955

3. VARIETY NAME
'Ransom'

4. ADDRESS *(Street and No., or R.F.D. No., City, State, and ZIP Code, and Country)*
c/o Executive Director
P.O. Box 5014
Fargo, ND 58105-5014

5. TELEPHONE *(include area code)*
701-231-8931

6. FAX *(include area code)*
701-231-1013

FOR OFFICIAL USE ONLY

PVPO NUMBER
9900250

FILING DATE
4-12-99

7. GENUS AND SPECIES NAME
Triticum aestivum

8. FAMILY NAME *(Botanical)*
vulgare

FEES RECEIVED
FILING AND EXAMINATION FEE: $ 2450 00
DATE 4-12-99
CERTIFICATION FEE: $ 320 00
DATE 6/28/01

9. CROP KIND NAME *(Common name)*
Hard Red Winter Wheat

10. IF THE APPLICANT NAMED IS NOT A "PERSON", GIVE FORM OF ORGANIZATION *(corporation, partnership, association, etc.) (Common name)*
501 (c) (3) Corporation - NDSU Research Foundation

11. IF INCORPORATED, GIVE STATE OF INCORPORATION
North Dakota

12. DATE OF INCORPORATION
May 30, 1989

13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS

LeRoy Spilde
Department of Plant Sciences
North Dakota State University
PO Box 5051
Fargo, ND 58105-5051

Dale Zetocha
Executive Director
NDSU Research Foundation
PO Box 5014
Fargo, ND 58105-5014

14. TELEPHONE *(include area code)*
701-231-8140

15. FAX *(include area code)*
701-231-8474

16. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED *(Follow instructions on reverse)*

- a. [X] Exhibit A. Origin and Breeding History of the Variety
- b. [X] Exhibit B. Statement of Distinctness
- c. [X] Exhibit C. Objective Description of the Variety
- d. [X] Exhibit D. Additional Description of the Variety *(Optional)*
- e. [X] Exhibit E. Statement of the Basis of the Applicant's Ownership
- f. [X] Voucher Sample *(2,500 viable untreated seeds or, for tuber propagated varieties verification that tissue culture will be deposited and maintained in an approved public repository)*
- g. [X] Filing and Examination Fee ($2,450), made payable to "Treasurer of the United States" *(Mail to PVPO)*

17. DOES THE APPLICANT SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY, AS A CLASS OF CERTIFIED SEED? *(See Section 83(a) of the Plant Variety Protection Act)*
[ ] YES *(If "yes," answer items 18 and 19 below)* [X] NO *(If "no," go to item 20)*

18. DOES THE APPLICANT SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS?
[ ] YES [X] NO

19. IF "YES" TO ITEM 18, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED?
[ ] FOUNDATION [ ] REGISTERED [ ] CERTIFIED

20. HAS THE VARIETY OR A HYBRID PRODUCED FROM THE VARIETY BEEN RELEASED, USED, OFFERED FOR SALE, OR MARKETED IN THE U.S. OR OTHER COUNTRIES?
[X] YES *(If "yes," give names of countries and dates)* [ ] NO Released July 1, 1998

21. The applicant(s) declare that a viable sample of basic seed of the variety will be furnished with application and will be replenished upon request in accordance with such regulations as may be applicable, or for a tuber propagated variety a tissue culture will be deposited in a public repository and maintained for the duration of the certificate.

The undersigned applicant(s) is(are) the owner(s) of this sexually reproduced or tuber propagated plant variety, and believe(s) that the variety is new, distinct, uniform, and stable as required in Section 42, and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act.

Applicant(s) is(are) informed that false representation herein can jeopardize protection and result in penalties.

SIGNATURE OF APPLICANT *(Owner(s))*		SIGNATURE OF APPLICANT *(Owner(s))*	
Dale Zetocha			
NAME *(Please print or type)*		NAME *(Please print or type)*	
Dale Zetocha			
CAPACITY OR TITLE	DATE	CAPACITY OR TITLE	DATE
Executive Director	4/7/99		

STD-470 (03-96) *(Previous editions are to be destroyed)* *(See reverse for instructions and information collection burden statement)*

EXHIBIT A – ORIGIN AND BREEDING HISTORY

'RANSOM'

Selection Criteria:

Pedigree: Seward/SD76705 (Centurk*5/Hand)

1984: Final cross made; NDSU greenhouse

1985: F1 generation; NDSU greenhouse; all plants uniform

1986: F2 bulk population; NDSU research land; no selection applied; segregating for maturity, plant height, and disease resistance.

1987: F3 bulk population; NDSU research land; selected 100 random spikes; segregating for maturity, plant height, and disease resistance.

1988: F4 head row (F3-derived); NDSU research land; selected based on appropriate plant height, maturity, and grain yield; no segregation observed within the headrow.

1989: F5 Observation Nursery; NDSU research land; selected based on appropriate plant height, maturity, field resistance to leaf and stem rust, grain protein content, test weight, grain yield, and greenhouse-based seedling resistance to race TNMK of stem rust; no segregation observed within the single row.

1990: F6 Preliminary Yield Trial (tested as ND8955); NDSU research land; selected based on appropriate plant height, maturity, field resistance to leaf and stem rust, grain protein content, test weight, grain yield, milling and baking quality; no segregation noted.

1991: F7 Advanced Yield Trial, NDSU research land; selected based on appropriate plant height, maturity, field resistance to leaf and stem rust, grain protein content, test weight, grain yield, milling and baking quality; no segregation noted.

1992: ND HRW Variety Trial, NDSU research land, Northern Regional Performance Nursery; selected based on appropriate plant height, maturity, field resistance to leaf and stem rust, grain protein content, test weight, grain yield, milling and baking quality; segregation observed among 5 seedlings tested for reaction to stem rust race RTQ in greenhouse test.

1993: ND HRW Variety Trial, NDSU research land, Northern Regional Performance Nursery; selected based on appropriate plant height, maturity, field resistance to leaf and stem rust, grain protein content, test weight, grain yield, milling and baking quality; no segregation noted.

1994: ND HRW Variety Trial, NDSU research land, Northern Regional Performance Nursery; selected based on appropriate plant height, maturity, field resistance to leaf and stem rust, grain protein content, test weight, grain yield, milling and baking quality; segregation for head type and size, height, and leaf rust reaction observed in the field – 500 individual plants harvested for purposes of re-selection; segregation observed among 5 seedlings tested for reaction to stem rust races RTQ and QFB in greenhouse test.

1995: ND HRW Variety Trial, NDSU research land; selected based on appropriate plant height, maturity, field resistance to leaf and stem rust, grain protein content, test weight, grain yield, milling and baking quality; 83 plant-rows selected for purification based on uniformity of head size and type, plant height, and leaf rust reaction; segregation observed among 5 seedlings tested for reaction to stem rust races RTQ and TNMK in greenhouse test.

1996: ND HRW Variety Trial, NDSU research land; selected based on appropriate plant height, maturity, field resistance to leaf and stem rust, grain protein content, test weight, grain yield, milling and baking quality; 75 plant-rows bulk harvested and designated as ND8955-A based on uniformity of head size and type, plant height, and greenhouse stem rust reactions.

1997: ND HRW Variety Trial (ND8955 and ND8955-A, NDSU research land); selected based on appropriate plant height, maturity, field resistance to leaf and stem rust, grain protein content, test weight, grain yield, milling and baking quality; no segregation observed in ND8955-A.

1998: ND8955-A released as 'Ransom'.

Evidence of Uniformity and Stability:

Ransom has been observed to be both uniform and stable over four generations.

No variants have been observed in Ransom.

EXHIBIT B. – NOVELTY STATEMENT

Ransom is most similar to Seward. Ransom differs from Seward in being resistant to race RTQ of stem rust, whereas Seward is susceptible.

Table 1. Reaction of the hard red winter wheat cultivars Ransom and Seward to seedling-stage inoculation four races of stem rust (*Puccinia graminis*).

	Stem Rust Race			
Cultivar	TNMK	RTQ[1]	QSH	QCC
Ransom	VR	R	S	VR
Seward	VR	S	S	VR

VR=very resistant; R=resistant; MR=moderately resistant; MS=moderately susceptible; S=susceptible.

[1] RTQ data was consistent in greenhouse seedlings inoculations conducted in 1991, 1992, 1993, 1994, 1995, 1996, and 1997. 1991-1995 data were based on the experimental line ND8955. 1996 and 1997 data were based on the selections out of ND8955 that were combined to form Ransom.

Tables 1 and 3 provide data from two trials comparing the reaction of Ransom and Seward to leaf rust shows a clear resistance advantage of Ransom over Seward. Tables 3, 4, and 5 provide data from three trials that compare plant height and heading date for both Ransom and Seward. Data from the three trials consistently show that Ransom heads four to five days before Seward. Data also show that Ransom is five to eight inches shorter than Seward.

9900250

2000 Hard Red Winter Wheat

Northern Regional Performance Nursery

5

Origin, disease reaction, and other traits for HRW wheat entries.

Variety	Origin	Lodging res	End use qlty	Winter hardiness	Disease reaction			
					Strk msc	Rust lf/st	Tan-spot	Shoot scale#
Quantum 7588	HYT-99	Good	Acc	-	MS	MR/-	-	-
Quantum 7406	HYT	-	-	-	-	- /-	-	-
Quantum 9806	HYT	-	-	-	-	- /-	-	-
Quantum 7463	HYT	-	-	-	-	- /-	-	-
Wesley	NE-98	Exc	Acc	G-Exc	S	MS/R	MR	1
Alliance	NE-93	Good	Acc	Good	MS	S /MR	VS	1
Vista	NE-92	Fair	Good	Good	MS	MR/MR	VS	1
Tam-107	TX-84	Exc	Acc	Poor-F	MR	S /MR	S	4
Trego~(W)	KS-99	F-Good	Exc	F-Good	S	MR/MR	-	-
NuPlains~(W)	NE-99	Good	Acc	Good	S	MS R	S	2
Millennium	NE-99	Good	Acc	F-Good	S	MS/MR	-	4
2137	KS-95	Exc	Good	F-Good	MR	MR/MS	R	4
Arapahoe	NE-88	Fair	Good	G-Exc	S	MR/MR	S	4
Culver	NE-98	Good	Acc	Fair	S	MS/MR	-	4
Nekota	NE/SD-94	Good	Good	Good	MS	MR/MR	MR	3
Windstar	NE-96	Good	Acc	Good	MS	- /MR	VS	6
Harding	SD-99	F-Good	Acc	Exc	MR	MR/MR	MR	6
Hondo	AP-98	Good	-	Good	MR	R /MS	R	4
Jagger	KS-94	Good	Exc	Poor	MR	MR/MS	R	2
Tandem	SD-97	F-Good	Exc	Good	S	S /MR	S	7
Siouxland	NE-84	Good	Acc	Good	S	M /MR	MR	7
Crimson	SD-97	Good	Good	G-Exc	MR	S /MR	R	8
Cougar	NE-00	Good	Good	Good	S	MS/MR	-	-
Ransom	ND-98	Fair	Poor	Exc	S	MR/MR	-	5
Rose	SD-81	Good	Exc	G-Exc	S	S /MR	R	8
Scout 66	NE-66	Poor	Good	F-Good	MS	S /MS	MR	9
Seward	ND-87	Good	Acc	G-Exc	S	S /MR	S	6
Roughrider	ND-76	Poor	Good	Exc	S	S /MR	MR	8

* Exc=exceptional, Acc=acceptable and quality.
+ VS=very susceptible, S=suscept., MS=moderatley suscept.
MR=mod. resistant, and R=resistant.
# Shoot scale of 1=very short to 9=very long; high values are best.

Table 1.

Table 2.

9900250

2000 Winter Wheat Leaf Rust Reactions/Casselton Nursery
Flag leaves read June 26, 2000

Entry	Rep 1	Rep 2	Rep 3	Rep 4	Overall rating
Agassiz	10S 5MS	10S 5MS	10S	10S 5MS	S
Alliance	40S	30S	30S	50S	S
Arapahoe	10MS	5R TMR	20S	5R 5MR	S/MS
CDC Kestrel	10MS 5MR	TMS TMR	10MS	10S 10MS	MS
Crimson	5S 5MS	10S 5MS	10S	10S 5MS	S
Elkhorn	5R	5R	5R	5R	R
Erhardt	20S 10MS	20S	20MS	50S	S
NeKota	30S	5S 5MS	10MS	10S	S
Norstar	30S	5S TMS	5MS	10S 20MS	S
Ransom	10MR	TMR	5MS	10MR	MR
Roughrider	40S	10S 5MS	20S	10S 5MS	S
Seward	20S 10MS	15S	10MS	20S 10MS	S
Tandem	10S 10MS	20S	5R 5MR	30S	S
Winstar	10R TMR	5S 5MS	20MS	10R	MS/MR
Daws	15S 5MS	40S	20MS	20S	S
Eltan	30S	30S	30S	40S	S
ND9257	10R	5R	5S 5MS	5R	MR/MS
ND9304	10S 10MS	20S	40S	40S	S
ND9419	20S 10MS	10S 10MS	10S 10MS	30S	S
ND9460	10MS	20S 10MS	20S 10MS	5S 5MS	S
ND9526	20S 10MS	20MS	30S	50S	S
SD92107	10MS	10R	5MR 5MS	10MR	MS/MR
SD93267	10S 10MS	15S	5MS 5MR	10S 10MS	S

S = susceptible, MS = moderately susceptible, MR = moderately resistant, R = resistant

Table 3

9900250

Hard Red Winter Wheat — **Casselton**

Variety	Plant Height	Heading Date	Lodging	Winter Survival	Test Weight	Protein	Average Grain Yield 1998	1999	2000	2 Year Avg	3 Year Avg
	in	June 1 +152	%	%	lbs/bu	%	bu/A				
Agassiz	37	12	50	72	58.6	12.8	61.4	48.8	51.7	50.3	54.0
Alliance	31	5	42	82	56.5	11.4	83.0	50.4	76.9	63.7	70.1
Arapahoe	32	8	60	80	58.6	13.7	86.2	57.1	78.7	67.9	74.0
CDC Kestrel	36	11	22	92	57.6	11.1	68.6	63.6	79.1	71.4	70.4
Crimson	33	8	37	85	59.3	13.2	76.2	63.4	64.9	64.2	68.2
Daws	34	12	42	75	43.0	13.0	--	--	32.9	--	--
Elkhorn	38	14	62	87	59.6	13.8	72.6	62.5	51.0	56.8	62.0
Eltan	33	15	75	80	38.9	14.8	--	--	17.3	--	--
Erhardt	35	10	47	90	54.5	14.4	62.3	45.2	41.7	43.5	49.7
Harding	39	9	42	87	60.0	13.9	--	73.3	75.5	74.4	--
Nekota	33	6	32	80	59.3	12.0	84.9	60.3	80.2	70.2	75.1
Norstar	42	14	60	95	54.4	12.2	64.4	53.2	33.6	43.4	50.4
Ransom	35	9	52	88	59.4	13.0	80.2	55.0	85.9	70.4	73.7
Roughrider	39	12	70	88	59.1	13.9	65.1	59.6	32.8	46.2	52.5
Seward	40	14	42	92	55.9	11.5	80.5	41.6	34.7	38.2	52.3
Tandem	37	7	72	90	61.0	12.6	79.6	46.8	86.6	66.7	71.0
9257	93.5	11.7	52	80							
Windstar	36	7	75	80	59.5	13.8	78.0	65.8	67.1	66.5	70.3
Mean	36	10	52	85	56.2	13.0	74.5	56.44	58.3	59.6	63.8
LSD(0.05)	1	1	21	17	1.9	0.8	8.7	17.6	15.0	--	--
C.V.	1.8	6.5	28.4	14.8	2.4	4.5	8.5	21.98	17.6	--	--
R-Square	0.96	0.96	0.61	0.47	0.96	0.79	--	0.907	0.84	--	--

Planting date: September 15, 1999

Harvested: July 26, 2000.

Table 4

9900250

NDSU Carrington Research Extension Center
2000
No-Till
Hard Red Winter Wheat Variety Trial

Obs	Variety	Jday of Head	Plant Lodge	Plant Height	Grain Protein	1000 KWT	Test Weight	Grain Yield
			0-9	inch	%	gms	lb/bu	bu/ac
1	Agassiz	161.8	1.3	42.2	13.4	27.0	61.8	58.2
2	Alliance	156.0	0.8	31.4	11.3	27.7	61.1	66.2
3	Arapahoe	157.8	1.0	33.2	13.7	28.5	61.2	77.3
4	CDC Kestrel	161.8	0.8	37.2	12.4	26.8	59.9	64.0
5	Crimson	158.3	0.5	33.7	13.3	27.8	63.2	61.1
6	Daws	162.5	0.0	32.4	11.8	28.2	52.7	43.8
7	Elkhorn	161.3	0.8	37.8	13.2	29.4	61.9	53.6
8	Eltan	165.5	0.0	32.2	12.7	26.3	43.3	32.3
9	Erhardt	159.0	0.3	31.2	14.3	25.5	58.4	54.5
10	ND9257	159.5	0.3	33.4	11.5	32.8	58.4	66.0
11	ND9304	157.0	1.3	37.9	12.6	30.1	62.0	75.1
12	ND9419	159.8	0.8	33.0	13.2	25.3	60.2	62.8
13	ND9460	158.5	0.8	35.1	12.3	31.7	62.0	65.0
14	ND9526	157.3	0.8	37.6	13.4	27.8	63.4	57.3
15	Nekota	156.0	1.3	31.4	12.9	33.5	62.1	76.2
16	Norstar	162.8	0.5	40.9	11.8	29.1	60.0	56.2
17	Ransom	159.0	0.5	34.3	12.0	28.2	61.5	67.1
18	Roughrider	160.0	1.0	37.2	14.3	28.6	60.6	57.5
19	SD92107	159.0	0.0	35.4	13.1	29.4	59.9	59.1
20	SD93267	157.0	1.3	38.5	13.4	28.9	61.9	71.3
21	Seward	163.0	1.5	42.8	12.4	29.1	62.6	59.6
22	Tandem	157.0	0.5	34.2	12.9	36.8	62.9	68.5
23	Windstar	157.5	2.8	38.6	13.9	26.0	61.9	64.0
	Mean	159.4	0.8	35.7	12.9	28.9	60.4	61.9
	C.V. %	0.5	112.0	4.5	8.7	3.4	3.0	12.1
	LSD .05	1.0	1.3	2.3	1.6	1.4	2.6	10.6
	LSD .01	1.4	NS	3.0	2.1	1.8	3.4	14.0
	#REPS	4	4	4	4	4	4	4

Planting Date = September 15; Harvest Date = July 24; Previous Crop = Oat

** Please note that the varieties "Daws" and "Eltan" are soft wheats.

Milliston Table 5.

9900250

CULTIVAR	Survival %	Date fr Jan 1	Disease %a	Height cms	Height inches	Weight lbs/b	Yield bus/a
Agassiz	90.0	157	13.3	87.5	34.4	62.45	65.43
Alliance	86.3	150	66.7	65.8	25.9	62.15	67.85
Arapahoe	84.8	152	30.0	78.8	31.0	61.97	60.63
CDC Kestrel	82.5	158	41.7	79.5	31.3	62.07	68.33
Crimson	61.3	155	11.7	73.3	28.8	62.50	46.03
Elkhorn	81.3	158	28.3	82.5	32.5	62.36	67.17
Erhardt	78.8	156	11.7	68.5	27.0	62.66	61.48
NeKota	67.5	148	21.7	68.8	27.1	62.78	56.46
Norstar	70.0	160	13.3	97.0	38.2	61.53	69.99
Ransom	67.5	156	25.0	74.8	29.4	62.21	65.28
Roughrider	81.3	158	16.7	86.5	34.1	62.36	64.97
Seward	82.5	160	13.3	94.3	37.1	62.63	75.42
Tandem	80.0	152	20.0	70.8	27.9	62.75	66.85
Windstar	62.5	154	18.3	76.5	30.1	62.66	60.63
Daws	53.8	158	2.0	72.3	28.4	57.63	59.03
Eltan	71.3	161	1.3	77.3	30.4	57.20	73.24
ND9257	68.8	157	8.3	80.3	31.6	61.79	70.28
ND9304	68.8	152	18.3	77.8	30.6	62.35	64.17
ND9419	60.0	158	21.7	82.5	32.5	61.60	63.24
ND9460	71.3	156	26.7	77.8	30.6	62.44	70.86
ND9526	93.8	153	23.3	77.8	30.6	62.97	59.29
SD92107	83.8	156	8.3	72.5	28.5	61.59	64.80
SD93267	80.0	152	28.3	81.0	31.9	62.72	65.88
BigSky	90.0	156	3.7	79.0	31.1	61.54	72.73
Morgan	75.0	159	15.0	79.5	31.3	61.65	69.64
Nuwest	88.8	158	8.3	76.3	30.0	60.79	69.56
Rappart	80.0	157	4.3	69.3	27.3	62.11	56.22
McGuire	73.8	150	20.0	72.3	28.4	61.77	56.46
MT97104	87.5	160	2.0	78.3	30.8	59.96	69.39
MT9426	90.0	158	10.0	69.3	27.3	61.39	76.61
HIGH MEAN	93.8	161	66.7	97.0	38.2	62.97	76.61
LOW MEAN	53.8	148	1.3	65.8	25.9	57.20	46.03
EXP MEAN	77.1	156	17.8	77.6	30.5	61.75	65.26
C.V. %	15.8	0.4	45.7	4.7	4.7	1.14	10.92
LSD 5%	17.1	0.9	13.3	5.1	2.0	1.44	10.02
LSD 1%	22.7	1.2	17.7	6.8	2.7	1.94	13.28
# OF REPS	4	4	3	4	4	2	4
F-TRT	2.9	100	8.1	15.8	15.8	7.30	3.40

Planted: September 10, 1999
Harvested: july 24, 2000
a - Mostly bacterial leaf disease; rated on flag leaf

Winter survival ratings are visual ratings taken in May. So though the winter was mild, final stands were affected by spring events such as soil drifting, late occurring alternate freezing and thawing cycles and etc. Thus the ratings this year may not be true winter hardiness ratings.

FORM APPROVED: OMB NO. 0581-0055

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
COMMODITIES SCIENTIFIC SUPPORT DIVISION
BELTSVILLE, MARYLAND 20705

EXHIBIT C
(Wheat)

900250

OBJECTIVE DESCRIPTION OF VARIETY
WHEAT (*TRITICUM SPP.*)

INSTRUCTIONS: *See Reverse.*

NAME OF APPLICANT(S)
NDSU Research Foundation

ADDRESS (*Street and No. or R.F.D. No., City, State, and ZIP Code*)
P.O Box 5014
Fargo, N.D. 58105-5014

FOR OFFICIAL USE ONLY
PVPO NUMBER

VARIETY NAME OR TEMPORARY DESIGNATION
'Ransom' (ND8955)

Place the appropriate number that describes the varietal character of this variety in the boxes below.
Place a zero in first box (e.g. [0][8][9] or [0][9]) when number is either 99 or less or 9 or less.

1. KIND:
[1] 1 = COMMON 2 = DURUM 3 = EMMER 4 = SPELT 5 = POLISH 6 = POULARD 7 = CLUB

2. TYPE:
[2] 1 = SPRING 2 = WINTER 3 = OTHER (*Specify*) _____
[ ] 1 = SOFT 2 = HARD 3 = OTHER (*Specify*) _____
[2] 1 = WHITE 2 = RED 3 = OTHER (*Specify*) _____

3. SEASON - NUMBER OF DAYS FROM EMERGENCE TO:
[2][7][6] FIRST FLOWERING
[2][8][1] LAST FLOWERING

4. MATURITY (*50% Flowering*):
[ ][ ] NO. OF DAYS *EARLIER* THAN .....
[0][4] NO. OF DAYS *LATER* THAN .....
[ ] [2] 1 = ARTHUR 2 = SCOUT 3 = CHRIS 4 = LEMHI 5 = NUGAINES 6 = LEEDS

5. PLANT HEIGHT (*From soil level to top of head*):
[ ][7][9] CM. HIGH
[ ][3] CM. TALLER THAN ..... [2]
[ ][ ] CM. SHORTER THAN ..... [ ]
1 = ARTHUR 2 = SCOUT 3 = CHRIS 4 = LEMHI 5 = NUGAINES 6 = LEEDS

6. PLANT COLOR AT BOOTING (*See reverse*):
[2] 1 = YELLOW GREEN 2 = GREEN 3 = BLUE GREEN

7. ANTHER COLOR:
[1] 1 = YELLOW 2 = PURPLE

8. STEM:
[1] Anthocyanin: 1 = ABSENT 2 = PRESENT
[1] Hairiness of last internode of rachis: 1 = ABSENT 2 = PRESENT
[0][4] NO. OF NODES (*Originating from node above ground*)
[1] Waxy bloom: 1 = ABSENT 2 = PRESENT
[1] Internodes: 1 = HOLLOW 2 = SOLID
[2][8] CM. INTERNODE LENGTH BETWEEN FLAG LEAF AND LEAF BELOW

9. AURICLES:
[1] Anthocyanin: 1 = ABSENT 2 = PRESENT
[1] Hairiness: 1 = ABSENT 2 = PRESENT

10. LEAF:
[2] Flag leaf at booting stage: 1 = ERECT 2 = RECURVED 3 = OTHER (*Specify*): _____
[2] Flag leaf: 1 = NOT TWISTED 2 = TWISTED
[1] Hairs of first leaf sheath: 1 = ABSENT 2 = PRESENT
[2] Waxy bloom of flag leaf sheath: 1 = ABSENT 2 = PRESENT
[1][1] MM. LEAF WIDTH (*First leaf below flag leaf*)
[2][0] CM. LEAF LENGTH (*First leaf below flag leaf*):

FORM LMGS 470-6 (6-82) (Formerly Form LPGS 470-6 (3-79), which may be used)

11. HEAD:

[2] Density: 1 = LAX 2 = DENSE

[4] Shape: 1 = TAPERING 2 = STRAP 3 = CLAVATE 4 = OTHER (Specify) "Fusiform" per letter 12/2/99 MH 2/20/

[4] Awnedness: 1 = AWNLESS 2 = APICALLY AWNLETED 3 = AWNLETED 4 = AWNED

[1] Color at maturity: 1 = WHITE 2 = YELLOW 3 = PINK 4 = RED 5 = BROWN 6 = BLACK 7 = OTHER (Specify): _____

[10][8] CM. LENGTH

[0][9] MM. WIDTH

12. GLUMES AT MATURITY:

[2] Length: 1 = SHORT (CA. 7 mm.) 2 = MEDIUM (CA. 8 mm.) 3 = LONG (CA. 9 mm.)

[2] Width: 1 = NARROW (CA. 3 mm.) 2 = MEDIUM (CA. 3.5 mm.) 3 = WIDE (CA. 4 mm.)

[3] Shoulder shape: 1 = WANTING 2 = OBLIQUE 3 = ROUNDED 4 = SQUARE 5 = ELEVATED 6 = APICULATE

[3] Beak: 1 = OBTUSE 2 = ACUTE 3 = ACUMINATE

13. COLEOPTILE COLOR:

[1] 1 = WHITE 2 = RED 3 = PURPLE

14. SEEDLING ANTHOCYANIN:

[1] 1 = ABSENT 2 = PRESENT

15. JUVENILE PLANT GROWTH HABIT:

[1] 1 = PROSTRATE 2 = SEMI-ERECT 3 = ERECT

16. SEED:

[1] Shape: 1 = OVATE 2 = OVAL 3 = ELLIPTICAL

[1] Cheek: 1 = ROUNDED 2 = ANGULAR

[2] Brush. 1 = SHORT 2 = MEDIUM 3 = LONG

[1] Brush: 1 = NOT COLLARED 2 = COLLARED

[0] Phenol reaction (See instructions): 1 = IVORY 2 = FAWN 3 = LT. BROWN 4 = BROWN 5 = BLACK

[3] Color: 1 = WHITE 2 = AMBER 3 = RED 4 = PURPLE 5 = OTHER (Specify) _____

[0][6] MM. LENGTH

[0][3] MM. WIDTH

[3][2] GM. PER 1000 SEEDS

17. SEED CREASE:

[1] Width: 1 = 60% OR LESS OF KERNEL 'WINOKA' 2 = 80% OR LESS OF KERNEL 'CHRIS' 3 = NEARLY AS WIDE AS KERNEL 'LEMHI'

[1] Depth: 1 = 20% OR LESS OF KERNEL 'SCOUT' 2 = 35% OR LESS OF KERNEL 'CHRIS' 3 = 50% OR LESS OF KERNEL 'LEMHI'

18. DISEASE: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

[2] STEM RUST (Races) TNMK, RTQ, QCC

[1] LEAF RUST (Races) _____

[0] STRIPE RUST (Races) _____

[0] LOOSE SMUT

[0] POWDERY MILDEW

[0] BUNT

[ ] OTHER (Specify) _____

19. INSECT: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

[0] SAWFLY

[0] APHID (Bydv.)

[0] GREEN BUG

[0] CEREAL LEAF BEETLE

[ ] OTHER (Specify) _____

HESSIAN FLY RACES: [0] GRSN [0] A [0] B [0] C [0] D [0] E [0] F [0] G

20. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED:

CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant tillering	Seward	Seed size	Seward
Leaf size	Seward	Seed shape	Seward
Leaf color	Seward	Coleoptile elongation	Seward
Leaf carriage	Seward	Seedling pigmentation	Seward

INSTRUCTIONS

GENERAL: The following publications may be used as a reference aid for the standardization of terms and procedures for completing this form:

(a) L.W. Briggle and L. P. Reitz, 1963, Classification of Triticum Species and Wheat Varieties Grown in the United States, Technical Bulletin 1278, United States Department of Agriculture.

(b) W.E. Walls, 1965, A Standardized Phenol Method for Testing Wheat Seeds for Varietal Purity, contribution No. 28 to the handbook of seed testing prepared by the Association of Official Seed Analysts. (See attachment.)

EXHIBIT D. – ADDITIONAL DESCRIPTION OF VARIETY

Table 1. Agronomic Characteristics of Ransom, Arapahoe, Elkhorn, Roughrider, and Seward from North Dakota locations from 1991-1997.

Variety	Grain Yield bu/A	Heading Date June	Height cm	Lodging 0-9	Winter Survival percent
Ransom	**51.0**	**14.4**	**79.0**	**3.1**	**75.5**
Arapahoe	49.9	11.9	73.6	1.9	64.3
Elkhorn	49.7	16.0	86.3	3.2	78.5
Roughrider	46.1	14.8	85.5	3.6	81.4
Seward	50.5	16.0	84.3	2.2	75.1
No. environments	39	33	38	13	16

Table 2. North Dakota State University Dept. of Cereal Sci. and Food Tech. Quality data of Ransom, Arapahoe, Elkhorn, Roughrider, and Seward from 25 North Dakota locations from 1992 to 1996 .

Variety	Test Weight lbs/bu	Protein %	Flour Extraction %	Mixing Time-Tolerance minutes	Water Absorption %	Loaf Volume cc
Ransom	**57.9**	**12.7**	**68.4**	**6.1 - 11.6**	**59.5**	**809.2**
Arapahoe	58.6	13.3	68.7	5.8 - 16.4	56.4	793.2
Elkhorn	59.0	13.1	69.2	9.8 - 17.2	59.1	845.4
Roughrider	59.3	13.6	69.8	6.9 - 17.1	59.9	872.4
Seward	58.6	12.1	68.1	10.3 - 17.2	58.4	823.6

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U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE

EXHIBIT E
STATEMENT OF THE BASIS OF OWNERSHIP

The following statements are made in accordance with the Privacy Act 1974 (5 U.S.C. 552a) and the Paperwork Reduction Act (PRA) of 1995.

Application is required in order to determine if a plant variety protectio certificate is to be issued (7 U.S.C. 2421). Information is held confidentia until certificate is issued (7 U.S.C. 2426).

1. NAME OF APPLICANT(S)	2. TEMPORARY DESIGNATION OR EXPERIMENTAL NUMBER	3. VARIETY NAME
NDSU Research Foundation	ND 8955	'Ransom'

4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP Code, and Country)	5. TELEPHONE (Include area code)	6. FAX (Include area code)
c/o Executive Director PO Box 5014 Fargo, ND 58105-5014	701-231-8931	701-231-1013
	7. PVPO NUMBER	9900250

8. Does the applicant own all rights to the variety? *Mark an "X" in appropriate block.* If no, please explain. [X] YES [ ] NO

9. Is the applicant *(individual or company)* a U.S. national or U.S. based company? [X] YES [ ] NO
If no, give name of country _____

10. Is the applicant the original owner? [ ] YES [X] NO *If no, please answer the following:*

a. If original rights to variety were owned by individual(s), is (are) the original owner(s) a U.S. national(s)?
[X] YES [ ] NO *If no, give name of country* _____

b. If original rights to variety were owned by a company, is the original owner(s) a U.S. based company?
[X] YES [ ] NO *If no, give name of country* _____

11. Additional explanation on ownership *(If needed, use reverse for extra space):*
See additional Exhibit and Statement of the Basis of the Applicant's Ownership included in the application.

PLEASE NOTE:

Plant variety protection can be afforded only to owners (not licensees) who meet one of the following criteria:

1. If the rights to the variety are owned by the original breeder, that person must be a U.S. national, national of a UPOV member country, or national of a country which affords similar protection to nationals of the U.S. for the same genus and species.

2. If the rights to the variety are owned by the company which employed the original breeder(s), the company must be U.S. based, owned by nationals of a UPOV member country, or owned by nationals of a country which affords similar protection to nationals of the U.S. for the same genus and species.

3. If the applicant is an owner who is not the original owner, both the original owner and the applicant must meet one of the above criteria.

The original breeder/owner may be the individual or company who directed final breeding. See Section 41(a)(2) of the Plant Variety Protection Act for definition.

According to the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0581-0055. The time required to complete this information collection is estimated to average 10 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

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To file a complaint, write the Secretary of Agriculture, U.S. Department of Agriculture, Washington, D.C. 20250, or call 1-800-245-6340 (voice) or (202) 720-1127 (TDD). USDA is an equal employment opportunity employer.

EXHIBIT E – STATEMENT OF THE BASIS OF THE APPLICANT'S OWNERSHIP

Dr. James A. Anderson, a former employee of the North Dakota Agricultural Experiment Station and North Dakota State University, is a plant breeder who developed 'Ransom' the hard red winter wheat cultivar for which Plant Variety Protection is hereby sought. The employee by agreement and because of the condition of the use of facilities and funds of the North Dakota Agricultural Experiment Station and North Dakota State University has assigned all ownership right to 'Ransom' hard red winter wheat to the North Dakota Agricultural Experiment Station and North Dakota State University.

North Dakota State University on behalf of the North Dakota Agricultural Experiment Station has assigned all ownership to the NDSU Research Foundation. The NDSU Research Foundation is a nonprofit corporation set up to own and manage the intellectual property of North Dakota State University.